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Luminescence kinetics of an Y0.8Yb0.2F3:Tm3+ solid solution crystal

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Abstract

© 2014, Pleiades Publishing, Inc. Upconversion luminescence kinetics of Tm3+ doped Y0.8Yb0.2F3 solid solution crystal was studied for various values of pulse excitation parameters: pulse duration, wavelength and excitation power. Analysis of obtained results allowed a conclusion about the presence of transient processes. The transient processes found in upconversion luminescence kinetics are characterized by duration commensurate with lifetime of the excited energy levels of the activator ions. Upon completion of these processes a stable equilibrium state is established between the processes of population and spontaneous decay of the excited energy levels of Tm3+ ions. Conditions under which the equilibrium state can be maintained have been considered.

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